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Problem-based, peer-to-peer global mental health e-learning between the UK and Somaliland: a pilot study.

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ABSTRACT (word count 250)

Background: The world health organization's mental health gap action programme intervention guide (mhGAP-IG) is an evidence-based tool aimed at front-line health workers in low and middle-income countries (LMICs). It has potential to improve global mental health education, especially through digital technologies, but this has been little studied. Problem-based learning (PBL) is usually conducted face-to-face, but its remote application could facilitate cross-cultural education

Objective: To evaluate PBL, applied to peer-to-peer global mental health e-learning ('Aqoon'), using mhGAP-IG.

Methods: Twelve pairs of UK and Somaliland medical students completed the full programme. Participants self-directedly met online, via the low-bandwidth Medicine Africa website, for PBL-style tutorials focused on modules of the mhGAP-IG, version 2.0. Pre- and post-participation surveys used mixed methods to evaluate Aqoon, including the Attitudes Toward Psychiatry (ATP-30) instrument.

Findings: Median ATP-30 scores for Somaliland (82.0 vs. 95.0, *p*=.003*)* and UK students (82.0 vs. 95.0, *p*=.011) improved significantly following Aqoon. Qualitative feedback showed that participants valued peer connectivity and learning about cultural and psychosocial differences in their partner's country. Somaliland students were motivated by clinical learning and UK students by global health education. Feedback on the PBL structure was positive.

Conclusions: Digital PBL represents an innovative method to extend the benefits of mhGAP-IG beyond front-line clinical staff, to healthcare students in LMICs.

Clinical implications: Educational resource limitations in LMICs may be overcome using digital platforms and PBL. Replication with non-medical healthcare students is the next step for this model would explore Aqoon's relevance to pressing global mental health workforce challenges.

ABSTRACT (word count 200)

Background: The World Health Organization's mental health gap action programme intervention guide (mhGAP-IG) is aimed at frontline staff in low and middle-income countries (LMICs). Its potential to improve global mental health education and e-learning has been little studied. Problem-based learning (PBL) is usually conducted face-to-face, but its remote application could facilitate cross-cultural education.

Objective: To evaluate PBL, applied to peer-to-peer global mental health e-learning, using the mhGAP-IG.

Methods: Twelve pairs of UK and Somaliland medical students completed the full programme. Partners met online for PBL-style tutorials built around mhGAP-IG (version 2.0) modules. Mixed methods pre- and post-participation surveys were administered, including ATP-30 (Attitudes Toward Psychiatry).

Findings: Median ATP-30 scores for Somaliland (82.0 vs. 95.0, *p*=.003*)* and UK students (82.0 vs. 95.0, *p*=.011) improved significantly post-participation. Students valued peer connectivity, cross-cultural and psychosocial learning. Somaliland students were motivated by clinical knowledge acquisition and UK students by global health education. Feedback on the PBL structure was positive.

Conclusions: Digital PBL represents an innovative method to apply the mhGAP-IG to healthcare education.

Clinical Implications: Educational resource limitations in LMICs may be overcome using digital platforms and PBL. Replication with non-medical healthcare students is the next step for this model, well-suited to multidisciplinary teaching.

Key words: global mental health, global health, psychiatry, e-learning, mhGAP, problem-based learning, e-medicine, peer education, attitudes to psychiatry, stigma.

BACKGROUND

Global mental health inequalities are increasingly pressing (1). By 2030, depression will become the world's leading cause of disease burden (2). Around 80% of people with severe mental disorders in low and middle-income countries (LMICs) receive no treatment (3). To bridge the gap between need and provision, the World Health Organization (WHO) developed the mental health gap action programme intervention guide (mhGAP-IG;4). Despite widespread uptake, relatively few published studies have assessed its effectiveness in health education (5).

In parallel, high-income countries (HICs) face a psychiatry recruitment crisis. In 2016, just 67% of UK core psychiatry training posts were filled (6). Stigma (7) and cultural beliefs can influence medical student perceptions of psychiatry (8,9). Medical student attitudes and career choices may be influenced by different educational approaches (10).

High quality global health education is limited worldwide (11). Sustainable, mutually beneficial, long-term institutional partnerships between high-income countries (HICs) and LMICs can address this problem and improve health bilaterally (12). Advances in global health (13) and psychiatry education (14) require innovative, low-cost technologies and partnership approaches.

University budget cuts (15) compound challenges in global health education. E-learning has attracted growing attention for its affordability, accessibility (16) and capacity-building potential in LMICs (17), but may be of low quality (18). The benefits of e-learning may be enhanced when combined with peer teaching (19,20), especially when learning outcomes and language are shared (21). Problem-based learning (PBL), where students solve clinical problems as a group, improves knowledge, critical reasoning and social skills (22). However, PBL research outside HICs is rare (23). Telemedicine offers one way to overcome the infrastructure requirements which limit face-to-face PBL (18), but is under-utilised in global mental health (24).

King's Somaliland Partnership (KSP), formed in 2000, is a health link between universities and hospitals of King's Health Partners in London, and Somaliland, a self-declared autonomous region in northern Somalia. KSP supports medical school mental health curriculum development (25), using Medicine Africa, a platform which delivers real-time, clinically-focused education, at low bandwidth (26).

'Aqoon', meaning 'knowledge' in Somali, is KSP's online global mental health peer-to-peer e-learning partnership between medical students in London and Somaliland (27). Established in 2009, participants report improved attitudes to psychiatry, factual knowledge and cross-cultural understanding (28). Challenges to successful peer educational partnership include variable motivation and the need for sustained engagement with a structured curriculum (29). To address this, we piloted the use of a PBL structure and an mhGAP-IG curriculum in Aqoon.

OBJECTIVES

We evaluated PBL and the mhGAP-IG for an online, global mental health peer-to-peer e-learning partnership, within a UK-Somaliland health link. We used mixed methods to study whether it:

- Improved attitudes, factual knowledge, and cross-cultural understanding of mental health.
- Showed promise for scaling up as a low-cost tool for global mental health education.

METHODS

Participants

Recruitment

A UK medical student and two elected Somaliland junior doctor mental health representatives, competitively selected by application, co-led Aqoon. Participants were recruited using convenience sampling. The programme was advertised by email, to medical students of King's College London (KCL), Bart's and the London, St George's, University of London, Hargeisa and Amoud universities in Somaliland, and through relevant groups on Facebook.com.

To reduce drop-out rates, informed by prior experience (28), prospective students submitted an introductory paragraph about themselves and their motivation for participating. All communication was conducted in English, the language of university education in Somaliland. The number of participants was determined by the (lower) number of UK applications received.

Advertisements were sent to final year Somaliland students, who had received psychiatry teaching from KSP. UK students of any year were invited to participate, due to low uptake from final years in previous iterations. Since UK students receive pre-clinical mental health teaching in early stages of their medical degree, baseline psychiatric knowledge was thought to be similar between groups.

Pairing

Pairs of one UK and one Somaliland student were matched at random, without any criteria, informed by prior experience (28). Somaliland students had experience of the mhGAP-IG (during KSP teaching), whilst UK students were exposed to more mental health promotion initiatives.

Instruments

Pre-Aqoon survey

Participants completed anonymised pre-Aqoon surveys via SurveyMonkey.com, a previously acceptable and feasible method in this setting (27,28). Simple language was used to ensure comprehension. Participants reported their age, nationality and year of medical training. Qualitative data comprised clinical and academic interests, psychiatry experience and personal learning objectives. A Likert scale was used to report 'likelihood of pursuing a career in psychiatry', from 'very unlikely' (1) to 'very likely' (5).

ATP-30

Participants completed the Attitudes Toward Psychiatry (ATP-30) questionnaire (30) pre- and post-Aqoon, which was previously used in this setting (27). It presents 30 attitudinal statements about psychiatry, with responses on a five point scale from 'strongly disagree' (1) to 'strongly agree' (5). Total scores range from 30 to 150; 90 indicates a neutral position.

Post-Aqoon survey

Participants were asked how many sessions they had completed. A mixture of Likert scales and free text boxes was used to probe experiences of Aqoon and perceived knowledge gained. Participants were asked their extent of agreement that 'organising tutorials with my partner was a problem' and 'tutorials were made difficult by a language barrier'.

Structure

Pairs were encouraged to complete eight online meetings, and a minimum of six. Tutorial guides using a PBL structure, with a case vignette and follow-up questions, were emailed to participants fortnightly. Pairs mutually agreed convenient times to meet online and work through the tutorial guide, using the MedicineAfrica.com instant messaging tutorial function. Clinical information was revealed as pairs progressed through a case. Guides were written by RM, an mhGAP-IG-trained psychiatrist and member of the KSP mental health group.

Tutorials were based on mhGAP-IG version 2.0 modules. Tutorial one included questions to support partners to get to know each other, including information about their countries and backgrounds. Tutorial one also covered mhGAP-IG's 'essential care and practice' module, providing a general introduction to mental health assessment for front-line staff (4). Subsequent tutorials focused on clinical modules, addressing affective disorders, psychosis, child and adolescent mental and behavioural disorders, dementia, substance misuse, self-harm and suicide. Tutorial guides allowed participants to move systematically through each module from assessment to management and follow-up. The relevant mhGAP-IG section for each question was clearly indicated. Additional questions prompted pairs to explore stigma, cultural, religious, ethical and psychosocial aspects of each case.

Based on previous feedback, a group tutorial was offered halfway through Aqoon. A Doodle.com online scheduling poll was used to select a suitable time and date, to maximise attendance.

Ethics

Aqoon forms part of the KSP MedicineAfrica evaluation, which has KCL ethics committee approval. Participants consented to complete anonymised questionnaires when signing up to Aqoon. Conversations on MedicineAfrica.com were visible to each pair, only. Participants received clear guidance regarding anonymisation of clinical discussions.

Analysis

Quantitative data were analysed using SPSS 23.0. Non-parametric analyses were performed due to small sample sizes. Median total ATP-30 scores between Somaliland and UK participants were compared using Wilcoxon rank-sum tests. Changes in scores pre- and post-Aqoon, for participants who completed both surveys, were analysed using Wilcoxon signed rank tests. A $p<.05$ significance level was used; data distribution was visually assessed prior to analysis.

Qualitative responses from UK and Somaliland students were analysed separately. Content analysis was performed by RM, using frequency counts of words and phrases. These were coded as themes emerged and similar codes were grouped into categories. RM maintained awareness of her position as a UK-based psychiatrist, to preserve reflexivity.

FINDINGS

Participant Flow

36 participants aged 21 to 33 years were accepted into Aqoon: 18 Somaliland and 18 UK students. 33 (92%) participants completed the initial survey (18 (100%) UK and 15 (83%) Somaliland). One UK student dropped out and five Somaliland students did not respond to emails. 26 students (13 pairs) proceeded with Aqoon and 24 completed it (92%). One pair completed five out of six sessions. The post-Aqoon survey response rate was 69%: eight UK and ten Somaliland. Three Somaliland student pre-course surveys were not identifiable, so seven were included in paired ATP-30 analysis.

Demographics

Fourteen Somaliland students were sixth (final) years at medical school; one was in their second year. Five (28%) UK students were in their first year, four (22%) in their second year, three (17%) in their third year and one (6%) in their fourth year. Five (28%) UK students were studying intercalated bachelor's degrees in global health

(28%), after two years of pre-clinical education. All Somaliland final year medical students had previous teaching or clinical experience in psychiatry, as did 92% (n=11) of UK students.

Motivation

Fourteen (78%) UK and three (20%) Somaliland students used the key words 'mental health', 'psychiatry' or 'psychology' when describing their clinical and academic interests. Ten (56%) UK students were interested in 'global health'. Fourteen (93%) Somaliland students said they were likely or very likely to consider a psychiatry career, compared to nine (50%) UK students.

Participants were asked what they hoped to gain by participating in Aqoon. The commonest themes were knowledge or experience of psychiatry (40% Somaliland, 24% UK), global mental health (21% UK only), differences in mental health between countries (16%) and cultural or psychosocial aspects (10%). Many participants (21%) were motivated by the opportunity to communicate with their partner and share personal experiences.

Post-Aqoon Feedback

All Somaliland (n=10) and UK students (n=8) completing the final survey agreed or strongly agreed that Aqoon improved their understanding of mental health in their own country and 80% (n=8) of Somaliland and 75% (n=6) of UK participants, of their partner's country; the remainder were 'neutral'. Nine (90%) Somaliland students and six (75%) UK students felt that Aqoon met their expectations; remaining participants were neutral *(Fig. 1*), e.g.

- *[Somaliland student: SL] This program has improved my knowledge in psychiatry and it made me more comfortable in treating my patients.*
- *[UK] It has enhanced my skills in thinking about the beliefs of different cultures and how to address some of the problems associated with the stigma of mental health.*

When asked what they liked about Aqoon, themes of peer connectivity (30%) and the opportunity to learn about another culture were prominent. Most responses praised aspects of Aqoon's design (80%), specifically the content of tutorial guides (33%), structure and timing (20%), ease of communicating via Medicine Africa (11%), support provided (9%), and use of the mhGAP-IG as a resource (7%).

Four (40%) Somaliland and six (75%) UK students felt that Aqoon made them more likely to consider a psychiatry career, with the remainder 'neutral'. All participants agreed or strongly agreed that Aqoon would influence them positively in their future career and would recommend Aqoon to a friend, e.g.:

- *[UK] I have gained a greater understanding of not just how to address mental health issues in this country, but also in Somaliland and that actually even though we have different cultures, we have overlapping problems and*

experience the same things such as stigma and attitudes towards mental health. I think now I feel more knowledgeable about the subject.

Learning Themes

Students were asked three things that they learned through Aqoon. UK students emphasised transcultural issues (21%), stigma (29%), and differences between countries (19%). For Somaliland students, the commonest themes were specific clinical knowledge (33%), how to approach someone with a mental health problem (22%), management strategies (19%) and the importance of psychosocial aspects (19%), e.g.:

- *[SL]: I have learnt empathy of the patient is better than medication sometimes.*

When asked three things that they had learned about mental health problems in the UK, Somaliland student themes included: better care (20%), less stigma and relatively greater respect (20%), and greater prevalence of substance misuse (20%). UK students most frequently identified learning about cultural differences and stigma in Somaliland (33%), and traditional spiritual and healing beliefs (33%), e.g.:

- *[SL] Isolation of patients is rare in UK compared to Somaliland where the patient and his family get stigma.*
- *[UK] The belief that mental health issues could be due to spirits and how this is an issue in combatting the stigma associated with mental health issues.*

Challenges and Improvements

All Somaliland students and 75% (n=6) of UK students had no difficulties organising meetings with their partners. One (13%) UK and no Somaliland participants mentioned a language barrier. UK students identified technical issues, particularly their partner's internet connection (21%), and using video (12%) as areas for improvement, although many acknowledged that this might not be possible. Somaliland students suggested expanding Aqoon to allow more learners to participate and covering different specialities (17%), using video or picture exchange (17%), choosing a fixed time and day for meetings (14%), improving the website (11%) and more supervision (8%).

Quantitative results

The median ATP-30 score for 33 pre-Aqoon survey respondents was 84.0 (IQR 79.0 – 93.0) and post-Aqoon (n=18) was 95.0 (IQR 81.0 – 104.25), a shift from below to above the 'neutral' cut-off of 90, in a less stigmatising direction. ATP-30 scores were not significantly different between Somaliland and UK participants pre- (84.0 vs 84.5, p=.447) or post-Aqoon (85.5 vs 95.0, p=.503) *(Table 1).*

Table 1. Comparison of ATP-30 scores between Somaliland and UK students pre- and post-Aqoon, using the Mann-Whitney-U Test.

Group	N=	Median score	Mean Rank	Mann - Whitney U	*Z*[a]	*P*[b]
Pre-Aqoon	33	84.0				
Somaliland	15	84.0	15.6	156.0	.760	.447
UK	18	84.5	18.2			
Post-Aqoon	18	95.0				
Somaliland	10	85.5	8.75	47.5	.670	.503
UK	8	95.0	10.4			

[a] Standardised Test Statistic.

[b] Asymptotic Signficance (2-sided test).

Analysis of 15 matched surveys pre- and post-Aqoon showed that one participant's ATP-30 score reduced, one was unchanged and the remaining 13 scores became more positive (less stigmatising), a statistically significant increase (82.0 vs. 95.0, z= -2.926, p=.003*)*. Considered separately, Somaliland participant ATP-30 scores improved non-significantly by a median 9.0 points post-Aqoon (77.0 vs. 88.0 z=-1.782 p=.075) and UK scores improved significantly by a median 6.5 (82.0 vs. 95.0 z=-2.536 p=.011) *(Table 2).*

Table 2. Comparison of scores pre- and post- test using *Wilcoxon* signed-rank tests

Group	N=	Median pre	Median post	Median increase	*Z*[a]	*P*[b]
All paired	15	82.0	95.0	9.0	-2.93	.003*
Paired UK	8	82.0	95.0	6.5	-2.54	.011**
Paired SL	7	77.0	88.0	9.0	-1.78	.075

[a] Standardised Test Statistic

[b] Asymptotic Significance (2-sided test)

* p <.05

**p<.005

DISSCUSSION

Key findings

Participants valued peer connectivity and the opportunity to learn about psychosocial and cultural aspects in their partner's country. Somaliland students were more motivated by clinical learning, whilst UK students were interested in global health and challenges affecting LMICs. Post-Aqoon learning themes mirrored these initial objectives. Most participants' attitudes towards psychiatry became more positive, but not significantly for Somaliland students; this may have been due to low sample size. Our findings suggest that short-term peer-to-peer educational interventions can influence mental health stigma among UK and Somaliland medical students. Given growing UK patient diversity, our findings suggest mutual benefits for participants on both sides of the Aqoon partnership. Despite the novel PBL format, 80% of Somaliland students identified tutorial structure, content and use of the mhGAP-IG as positive. Feedback from previous Aqoon iterations identified lack of structure as a factor in disengagement. Retention of participants was notably improved using PBL.

Strengths and limitations

Despite worldwide uptake, evaluations of mhGAP-IG's use have not been widely published (5). Ours is the first study using mhGAP-IG for peer-to-peer e-learning and using a PBL format (18). Using mixed methods enabled us to develop a more nuanced understanding of participant experiences. Triangulation of data increased validity of the findings.

Our sample size, and incomplete post-Aqoon surveys, limited our findings. Furthermore conducting semi-structured interviews or focus groups via Skype would have enhanced the quality and breadth of data collected, and is recommended for future studies. Logistical challenges included computer access and internet connection, but did not hinder completion unduly. Suggestions for increasing registration and retention include integrating Aqoon into university curricula. A previous Aqoon iteration administered surveys after each tutorial, but participants found it labour-intensive. Disadvantages of surveying participants only twice include a lost opportunity to capture each tutorial experience, and that of students who did not complete the final survey. Five Somaliland students dropped out before starting Aqoon for unspecified reasons; their views could have enriched our understanding.

CLINICAL IMPLICATIONS

Digital PBL represents an innovative method to extend the benefits of the WHO mhGAP-IG beyond front-line clinical staff, to healthcare students in low and high-income settings. Collaborative global health partnerships can address the need for high quality global health education. Aqoon facilitates cross-cultural learning and knowledge sharing between students at the frontline of mental health gaps in LMICs and HICs. Continued public sector austerity makes the need for low-cost, digital innovations in medical education similarly pressing in low and high-income settings.

Our study showed that adapting a previously-reported peer-to-peer e-learning partnership using digital PBL was positively rated by learners and improved retention. In particular, the mhGAP-IG with PBL represents a digital innovation in how clinical practice guidelines designed to scale-up global healthcare can provide educational tools for mutual benefit. Improved attitudes towards psychiatry among medical students in the UK and Somaliland indicate the potential of simple digital platforms to address mental health stigma around the world, through cost-neutral partnership models.

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